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A New Stegocephalian from the Pennsylvanian of Arkansas.

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THE remains of stegocephalians from deposits of Pennsylvanian age are rare enough and of sufficient interest and importance to warrant the record of even fragmentary specimens, especially if, as in this case, they come from a new locality. The specimen in hand, a femur, was found in a chunk of semianthracite coal from the Eureka mine, located about one mile west of Paris, Ark. The Eureka mine is working a vein of semianthracite coal, 18 to 26 inches in thickness, embedded in the Paris shale, a deposit with a total thickness of about 600 feet. The coal itself lies in the form of a saucer, the edges of which outcrop nearly all around the margin of the field and inclose an area of perhaps three or four square miles. The Eureka mine is located near the center and bottom of the "saucer," so that this stegocephalian femur came from near the deepest part of the coal bed. The Paris shale is an important member of the Alleghany formation in the region of Paris, Ark., and its age is Upper (but not uppermost) Pennsylvanian. It overlies the Fort Smith formation.

The four chief sources of amphibian remains previously known from the North American coal measures are all, as Moodie has pointed out, in the Alleghany. These are (1) the South Joggins coal mines in Nova Scotia, where Sir William Dawson secured the microsaurs described by him; (2) the Linton, Ohio, coal deposits, whence Newberry and others obtained the material described by Cope; (3) the Mazon Creek, Ill., shales, the species from which were described by Newberry, Cope and Moodie; and (4) the Cannelton, Pa., slates from which Moodie described the material now in the United States National Museum. These localities are all east of the Mississippi

and north of the Ohio rivers. There is additional interest, therefore, in the discovery of these remains in the Alleghany of Arkansas.

The writer made a special visit to the Eureka mine, and, while accorded every courtesy and facility by the mine operatives, failed to find any further traces of vertebrate remains. There are invertebrate and vegetable remains in the shale below the coal bed, but no evidence of vertebrates could be found. Since the bone described below came from the coal itself, the only possibility of further discovery of such specimens lies in the difficult and tedious inspection of the "chunks" of coal as they come from the mine. The miners themselves, naturally enough, in the course of their activities had never observed vertebrate remains.

Despite the relatively large number (nearly ninety species) of carboniferous amphibians listed by Moodie, our knowledge of the group at that time is still "woefully incomplete," as "is attested by the fact that nearly every specimen collected represents a type distinct from any hitherto known," as Moodie has noted.

The specimen in hand probably belonged to some embolomerous stegocephalian, and is therefore of additional interest since almost nothing is known of the appendages in that group. In length and size it indicates an animal larger than most of the carboniferous forms known to the writer, and may have been about the size of *Archegosaurus*, *i. e.*, about 1.5 meters. Both in size and shape this femur is somewhat suggestive of that of *Aspidosaurus** figured by Williston from the Permian of Texas, a *rhachitimus* stegoceph from the Craddock Bone bed of Baylor county. Our specimen is, however, more likely an *embolomerous* form (since the Upper Carboniferous temnospondyls heretofore known belong to that subdivision), although in the absence of associated vertebræ this fact cannot be definitely established.

This new specimen (Pl. XXVI) has a length of 60 mm. to the point where the proximal end is broken off. Its greatest width across its distal enlargement is 19 mm. The shaft, which is much more slender than the ends, is decidedly triangular in cross section, and its outer surface is elevated into a fairly sharp ridge. This ridge (Fig. A), evidently the adductor crest, is relatively high and runs directly distad over the outer surface of the femoral shaft, rising rather gradually to its greatest height on or near the proximal end, or head, of the bone. The mesial surface of the shaft describes a gentle arc, *i. e.*, this femur is decidedly bowed or arched (Fig. B).

* Williston, S. W., American Permian Vertebrates, Plate XXXII, figure 4.

Since this specimen represents an entirely new form, it seems best to assign it to a new genus and species, despite its fragmentary character. I therefore designate it as—

Arkanserpeton arcuatum, genus et species nov.

TYPE: An imperfect femur of an embolomeroous stegocephalian in the Museum of Vertebrate Paleontology, University of Kansas; catalogue number 1430; from the Eureka mine, near Paris, Ark., U. S. A.

HORIZON: A bed of semianthracite coal within the Paris shale, Alleghany formation, Upper Pennsylvanian.

DIAGNOSIS: Femur somewhat more than 60 mm. in length; distal end enlarged, with a width of about 19 mm., more or less; shaft curved and decidedly triangular in cross section, with a distinct, rather prominent adductor crest running directly distad along the convex outer side and rising gradually to its greatest height on or near the head of the femur. Mesial surface of the femoral shaft decidedly concave.